
SRN6
Seaspeed

Seaspeed for superspeed

British Rail "Seaspeed" Hovercraft carried their first fare paying passengers across the Solent from Southampton to Cowes on July 6th 1966.

In the year that followed, Seaspeed operated over 4,000 hours, carried well over 100,000 passengers, and completed over 8,300 scheduled crossings.

Seaspeed Hovercraft now run basic hourly services on two routes, Southampton/Cowes and Portsmouth/Cowes, and with the electrification of the main railway line between Waterloo and Southampton, the overall journey time from London to Cowes has been cut to only 1 hour 50 minutes.

Passage time on both Solent routes is only 20 minutes, although the average time is well under this.

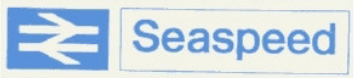
Single fare is 15s. 0d. (7s. 6d. for children 3 and under 14). Children under three years of age are carried free.

The Hovercraft fare from Portsmouth to Cowes includes train travel between Portsmouth and Southsea and Portsmouth Harbour stations.

All flights are bookable in advance. Passengers may telephone, apply in person, or by post (enclosing a self-addressed envelope) to:

SOUTHAMPTON	Seaspeed Terminal Crosshouse Road, Southampton, Hants. TELEPHONE: Southampton 21249.
PORTSMOUTH	Seaspeed Terminal Portsmouth Harbour Station Portsmouth, Hants TELEPHONE: Portsmouth 27220
COWES	Seaspeed Terminal Medina Road, Cowes, Isle of Wight. TELEPHONE: Cowes 2337
LONDON	Waterloo Station Information Office (Personal callers only).

Each passenger is permitted up to 50lbs of luggage, free of charge. Passengers must report FIVE minutes before flight departure.



The Hovercraft -
the historical background

The Hovercraft sprang from the brain of one man, Christopher Cockerell. In an age of teams, working-parties, committees and study groups, the Hovercraft is a refreshing proof that individuals still count.

Cockerell is by training an electronics engineer. His interest in transport came about in a way that had nothing to do with his job. He bought a boat-yard on the Norfolk Broads and started to think about boats – why they were "boat-shaped", why they couldn't go faster than a certain seemingly unsurpassable speed, and so on.

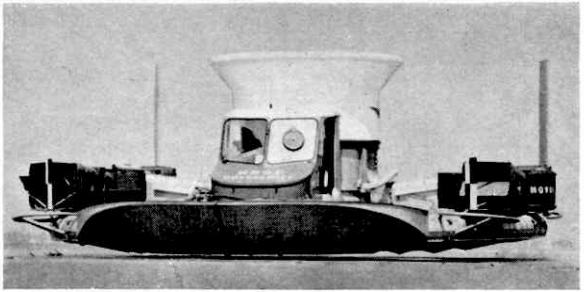
Ultimately he concluded that friction – the drag of the water on the bottom and the sides – was what kept boats to their low speeds. Even the largest and most powerful boats and ships still went very slowly in comparison with land and air vehicles. How could he overcome this drag?

Air Lubrication

Using his powers of observation and his professional training as an engineer, Cockerell eventually perfected a means of lubricating the bottom of boats so that friction was greatly reduced by using air as a lubricant.

After much painstaking experiment, Cockerell arrived at a means of putting air under the hull of a boat and of keeping it there. Cutting a long story short, he fused together his fundamental principles and arrived, eventually, at a completely novel concept in the field of transportation – a heavier-than-air amphibious vehicle that moved along, clear of the surface, on a cushion of air.

The advantages of his invention, which he named the Hovercraft, were manifold. Its amphibious capability has been the one that has captured the popular imagination most of all, but fundamentally the greatest single attribute of the Hovercraft is that it has beaten the bug of surface friction. That is why Seaspeed SR-N6 Hovercraft go at about 60



The first full scale Hovercraft SR-N1

miles an hour on the Solent – much faster than even the fast naval patrol boats that are often to be seen in the same waters.

The Ground Effect

Another significant advantage is that the Hovercraft is able to take full advantage of a natural phenomenon known as *the ground effect.* If you direct a jet of pressurized air through a hole in a metal plate, down towards the surface, the plate tends to rise. It rises for two reasons. First, if the nozzle you are using is attached to the plate the jet of air has a reverse thrust of its own, which forces both nozzle and plate away from the surface. Secondly, some of the air that hits the ground bounces back against the plate and so adds further lift.

This further lift comes from what has been called the ground effect. It makes Hovercraft very efficient mechanically, for the larger the under-surface of the Hovercraft, the greater, proportionally, is the reverse thrust of the air that bounces back.

So important is this ground effect that Hovercraft are known generically in the USA as ground-effect machines.

Further Developments

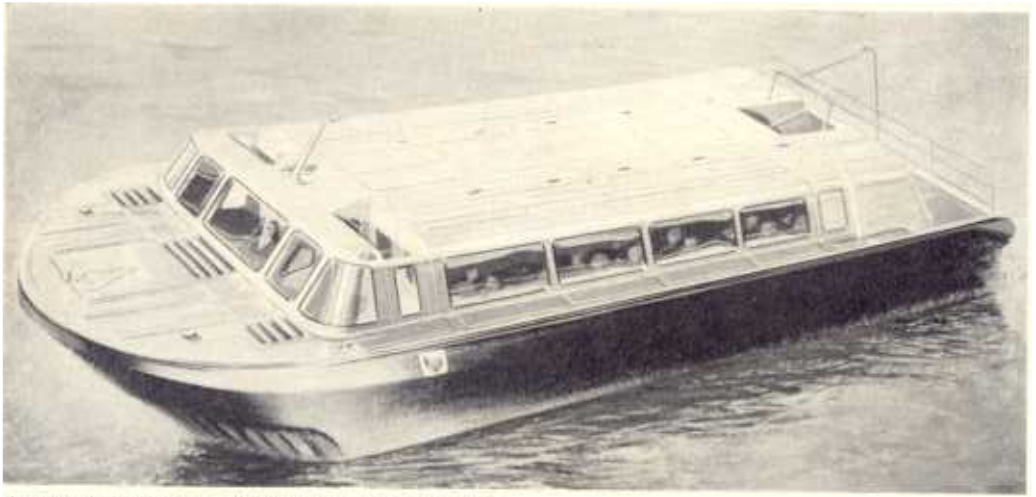
Cockerell and his co-workers have made many improvements to the fundamental principles underlying Hovercraft. In addition, the resources of major companies have been deployed for some years on Hovercraft manufacture. Much proving and trials-work has been undertaken by the manufacturers themselves and by the Defence Services.

It is small wonder that today this infant industry shows a degree of sophistication that must be the envy of its aircraft counterpart which took infinitely longer than 10 years to reach a comparable degree of sophistication.

The hovercraft appeals on all fronts by virtue of its unique attributes in terms of speed and amphibious capability, at the same time doing a useful job supremely well.

Research and development continue unabated. New types of hovercraft that are not amphibious, but operate on a cushion of air primarily contained by fixed "sidewalls", the sides of the craft extend down into the water, are now in production and these are likely to be manufactured and operated at much lower costs, thus putting hovercraft within economic reach of many more operations which cannot undertake the expense of operating the high performance craft that are fully amphibious and very fast.

Next year, 1968, will see the launching of the really large



An artist's impression of sidewall Hovercraft HM2

SR-N4 Hovercraft, capable of accommodating some 265 passengers and 30 cars on cross-Channel routes.

The next step after that may well be the Atlantic. We shall have to wait and see, but it is not being wildly optimistic to hope that the dynamic drive of Cockerell and the other technologists in the Hovercraft industry will continue as before, in which case the Atlantic may not seem such a problem after all.

Future development

British Rail Hovercraft will be the focus of world-wide attention when the company takes delivery of the first of the new generation of Hovercraft, the giant 160 ton SR-N4. This huge craft, which dwarfs all other Hovercraft now in service, will be used to carry 265 passengers and 30 cars on cross-Channel flights in 1968.

Built at a cost of £1,300,000 the SR-N4 will cut the journey time on the short sea routes between England and France from 90 minutes to about 30-35 minutes.

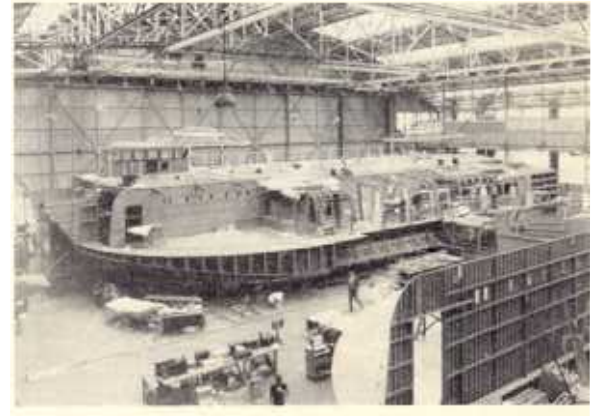
It will be able to operate in 12 foot seas, and in calm waters will be able to carry a load of 63.5 tons at a maximum cruising speed in excess of 70 knots over distances of up to 290 nautical miles.

The crew of the SR-N4 will consist of 12 people including three Officers as Flight Deck crew.

Meanwhile, pioneer work on the proving of Hovercraft in regular public service will be continued by British Rail Hovercraft with the purchase of a new type of economical and quieter Hovercraft, the first of its kind to go into service on the Solent.

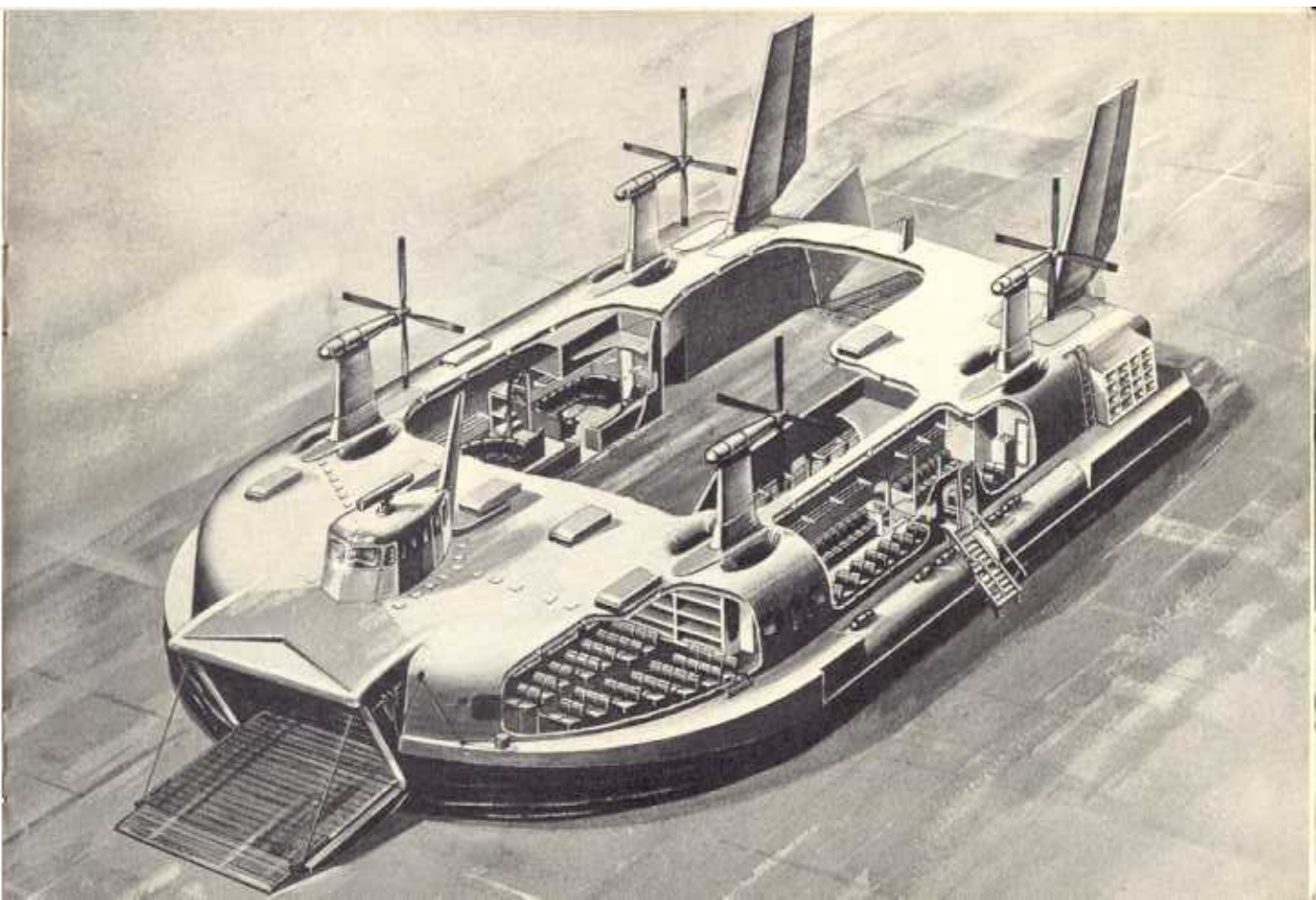
The craft, designated HM2 and manufactured by Hovermarine Limited of Southampton (see illustration page 5) is of the "immersed sidewall" type powered by conventional marine diesel engines and propelled by water screws.

With a capacity for 60-65 passengers at a surface speed of 35 knots – three times the speed of a conventional ferry – it has engines housed in sound insulated compartments below deck in order to cut noise to the minimum. It will operate from conventional dockside facilities.



The SR-N4 under construction.

Right:- An illustration of the SR-N4



The SR-N6 Hovercraft

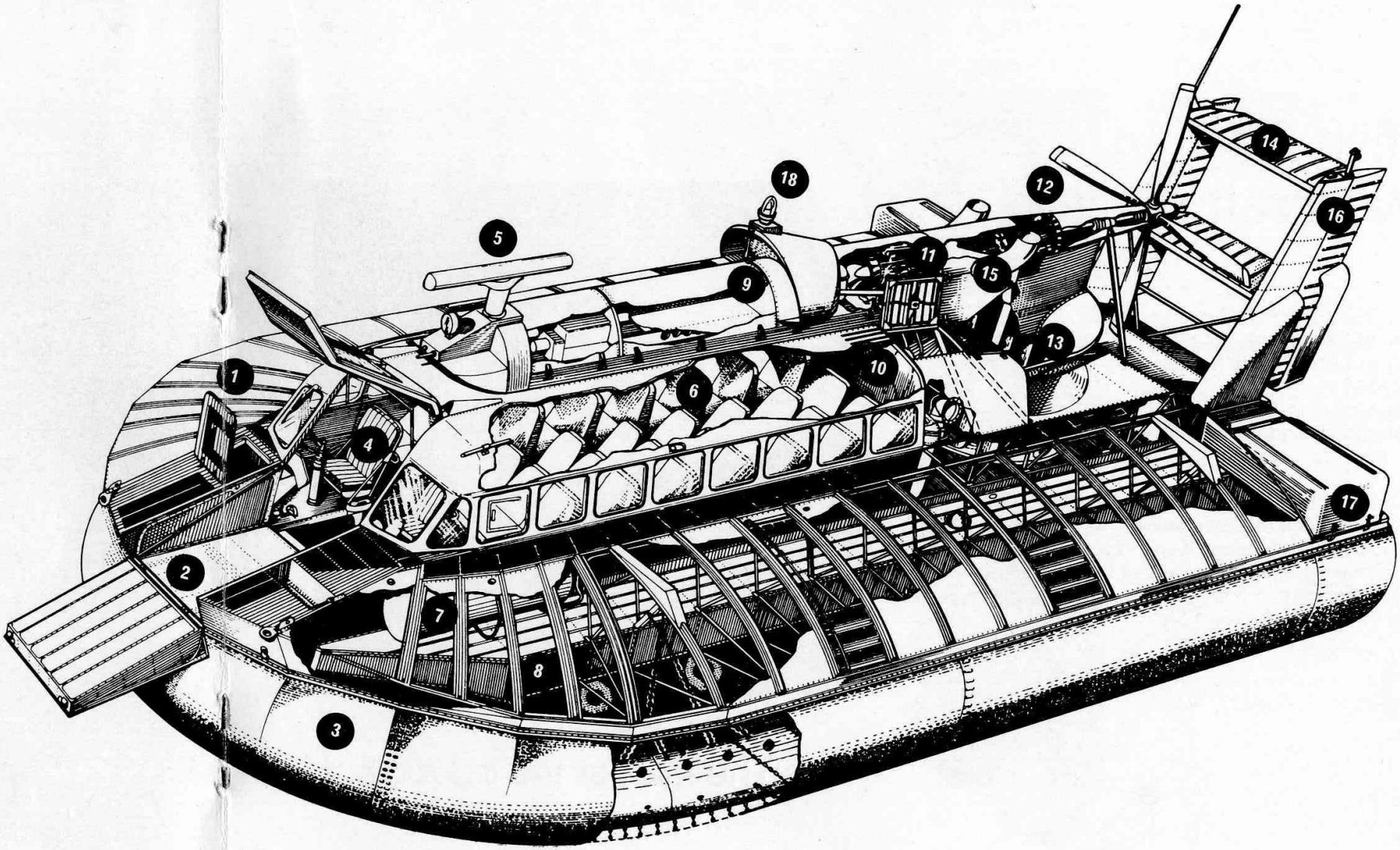
The SR.N6 is a high performance hovercraft powered by a single Bristol Siddeley Gnome Gas Turbine Engine developing over 900 h.p. The lift to provide the air cushion is produced by a 7 ft diameter fan and forward movement by a 9 ft diameter variable pitch propeller. 35 passengers or alternatively 3 tons of freight can be carried. The craft can operate in most conditions of wind and sea. Its normal cruising speed is over 50 knots.

Directional control is achieved by twin rudders plus an auxilliary air porting system and is further improved by a lifting system fitted to the flexible skirts. Seaspeed services operate day and night as well as in fog, the craft being fitted with Kelvin Hughes type K.17 North stabilised radar.

Overall length is 48 ft 5 ins; beam 23 ft; height on landing pads 15 ft. Cabin space 21 ft 9 ins by 7 ft 8 ins. Normal gross weight 9.12 tons.

KEY TO CUT AWAY DRAWING OF SR-N6

1. *Decking*
2. *Entrance*
3. *Flexible skirt*
4. *Commander's seat*
5. *Radar scanner*
6. *Passenger Cabin*
7. *Fuel/Ballast tank*
8. *Buoyancy tank*
9. *Engine air intake*
10. *Bulkhead in front of fuel tank*
11. *Gas turbine*
12. *Propeller*
13. *Lifting fan*
14. *Tailplane*
15. *Engine exhaust*
16. *Fin and rudder*
17. *Pannier*
18. *Navigation light*


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

British Rail Hovercraft Limited

British Rail Hovercraft Limited operates its services under the name of "Seaspeed". The Company is a wholly owned subsidiary of the British Railways Board and was incorporated in 1966.

Within four months of its inception the Company had recruited staff, designed and built terminals and commenced its first services between the mainland and the Isle of Wight.

The Company undertakes the training both of its own staff and others who require such a service.

Seaspeed's Commanders were experienced sea-going officers before entering the hovercraft field and all possess a Master's Certificate (Foreign-Going) and most have, in addition, some flying experience.

The men at the controls

Captain Hermod Brenna Lund, *Seaspeed's Training Captain, was previously in command of hovercraft and hydrofoils on service in the Baltic Sea and prior to that an officer of the Norwegian America Line.*

Commander Ian Dalziel *joined Seaspeed in November 1966 from his previous appointment as captain of British Rail Car Ferries. Prior to joining B.R. he was for 12 years with the British and Commonwealth Shipping Company.*

Commander John Syring, *a former officer of the Union Castle Line, also served on the Harwich Zeebrugge service before joining Seaspeed in November, 1966.*

Commander Peter Barr *joined Seaspeed in May 1966 having previously served with the New Zealand Shipping Company subsequently joining the British Rail Ferry Services.*

Commander Alan Burns, *a former Naval Officer, entered the Merchant Service with the Palm Line before sailing as an Officer on B.R.'s cross-Channel ferries.*

Commander Martin Godfrey *joined Seaspeed in November 1966 from his appointment as an Officer in the Trinity House service. Before that he was at sea with Union Castle Line.*

The Terminals

The first thing you see as you approach a Seaspeed Hovercraft terminal is the windsock. And the airport atmosphere is increased when you are met by hostesses in attractive uniforms.

On the Solent, the largest of the three terminals operated by Seaspeed is that at Cowes, which, as well as providing for the comfort of passengers in a pleasant and modern waiting lounge with refreshment facilities, also has accommodation for the maintenance crews necessary to maintain Hovercraft to a standard sufficient for the tough demands of a regular timetable. From the waiting lounge, passengers get a first class view of Hovercraft as they approach and leave Cowes, climbing the slipway to touch down on the landing apron, or taking off.

Extensive car parks provide easy access for motorists at both Cowes and Southampton. At Portsmouth, the Seaspeed Hovercraft shares its berth with conventional ferries and the service from there was the first regular Hovercraft service in the world to use conventional docking facilities. Entering Portsmouth Harbour the Hovercraft approaches a special pontoon and floats exactly as a conventional ship. Passengers embark and leave via an adjustable gangway.